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7 Perfectionism and burnout in canoe polo and kayak slalom athletes: The mediating
8 influence of validation and growth-seeking.

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1 Abstract

2 Recent research suggests that validation-seeking and dimensions of perfectionism
3 may be antecedents of athlete burnout. The present investigation examined whether
4 validation and growth-seeking mediate the relationship between self-oriented and socially
5 prescribed perfectionism and burnout. One-hundred and fifty canoe polo and kayak
6 slalom athletes recruited from the top two divisions in the UK completed measures of
7 validation and growth-seeking (GOI), perfectionism (HMPS), and athlete burnout (ABQ).
8 Analyses supported the mediating role of validation-seeking in the relationship between
9 socially prescribed perfectionism and burnout. However, while bivariate correlations
10 indicated that self-oriented perfectionism was positively related to both validation and
11 growth-seeking, neither mediated the self-oriented perfectionism-burnout relationship.
12 The findings suggest that validation-seeking may be an important psychological factor in
13 the development of burnout for athletes exhibiting high levels of socially prescribed
14 perfectionism. The relationship between self-oriented perfectionism and athlete burnout
15 remains unclear because of its association with multiple motives and with socially
16 prescribed perfectionism.

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1 Perfectionism and burnout in canoe polo and kayak slalom athletes: The mediating
2 influence of validation-seeking and growth-seeking.

3 When intense and prolonged achievement striving is accompanied by chronic
4 failure, some athletes may be susceptible to the development of burnout (Lemyre, Hall, &
5 Roberts, 2008). Athlete burnout is an extreme form of sport disaffection indicative of a
6 shift from an intense desire to succeed to psychological, emotional and potential
7 behavioural disengagement from a once valued activity (Schaufeli & Enzmann, 1998;
8 Smith, 1986). The syndrome is believed to manifest in three core symptoms that include
9 an enduring sense of reduced athletic accomplishment, physical and emotional
10 exhaustion, and the eventual devaluation of participation (Raedeke & Smith, 2001).
11 Collectively, these symptoms are purported to contribute to significant motivational and
12 psychological difficulties which may extend beyond the sport domain (Cresswell &
13 Eklund, 2006).

14 A number of theoretical models have identified potential antecedents as well as
15 key psychological mechanisms that may explain the development of these symptoms (see
16 Gould, 1996, for a review). Research based on a cognitive-affective model (Smith, 1986)
17 has supported the possibility that the onset of athlete burnout involves prolonged
18 exposure to chronic levels of psychosocial stress (e.g., Gould Tuffey, Udry & Loehr,
19 1996; Raedeke & Smith, 2004). Dissatisfied with the notion that burnout is solely the
20 result of a stress response, however, sport psychologists have also sought to identify
21 additional psychological processes that may explain the maintenance of participation in
22 the face of recurrent aversive experiences. This research suggests that psychological
23 over-investment may provide a further explanation of why the experience of stress leads
24 to the development of burnout in only a small number of athletes (see Coakley, 1992;
25 Raedeke, 1997; Schmidt & Stein, 1991).

1 Consistent with this perspective, Lemyre and colleagues (Lemyre et al., 2008)
2 have recently argued that the need to repeatedly validate a sense of self through sporting
3 achievement may explain why some athletes may be unable to extricate themselves from
4 the sporting environment when routine practice and competition has become a source of
5 chronic stress. According to Dykman (1998), the pursuit of self-validation is an active
6 vulnerability factor that interacts with the experience of negative events to predict
7 psychological and motivational difficulties. He suggests that when achievement striving
8 is underpinned by validation-seeking, behaviour is focused on proving basic worth,
9 competence or likeability. Thus, while achievement settings provide an opportunity to
10 affirm self-worth, repeated failure can also undermine one's sense of self. Moreover,
11 when athlete motivation is underpinned by validation-seeking, a maladaptive pattern of
12 engagement may emerge because individuals feel compelled to maintain investment and
13 gain the approval of others, despite the fact that their continued achievement striving may
14 evoke debilitating cognition and negative emotional experiences. Over time, this pattern
15 of engagement is likely to render athletes vulnerable to the development of burnout. A
16 very different pattern of engagement emerges when athlete motivation is underpinned by
17 growth-seeking tendencies. Under these circumstances, concerns over the impact of
18 failure become superseded by the realisation that continued investment can only increase
19 opportunities for personal development. Consequently, achievement related cognition and
20 affective responses tend to remain adaptive regardless of any perceived achievement
21 difficulty (Dykman, 1998), meaning that this form of goal pursuit may provide resilience
22 against the onset of burnout.

23 While validation-seeking may be one critical antecedent of athlete burnout, recent
24 research has also implicated a number of other personality factors that may render
25 athletes vulnerable to the condition (e.g., Appleton, Hall & Hill, 2009; Cresswell &

1 Eklund, 2006; Hill, Hall, Appleton & Kozub, 2008). One such personality characteristic
2 is perfectionism (e.g., Gould et al., 1996; Lemyre et al., 2008). Perfectionism is
3 considered to be a multidimensional disposition that broadly entails the endorsement of
4 exceedingly high standards and a preoccupation with harsh self-critical evaluation (e.g.,
5 Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). While perfectionism
6 has been conceptualised in a number of different ways (e.g., Frost et al, 1991; Hewitt &
7 Flett, 1991; Terry-Short, Owens, Slade & Dewey, 1995), research suggests that
8 perfectionistic striving in the absence of evaluative concerns will typically lead to
9 adaptive consequences. In contrast, there is strong evidence that the pursuit of
10 exceedingly high standards tends to have maladaptive consequences when achievement
11 striving is accompanied by harsh evaluative tendencies (see Stoeber & Otto, 2006).

12 Recent research examining the association between perfectionism and athlete
13 burnout has found that when the pursuit of high standards is combined with evaluative
14 concerns, it contributes to a motivational profile that may render athletes vulnerable to
15 burnout (Lemyre et al., 2008). This finding is believed to be, in part, because the
16 combined effect of these dimensions predisposes athletes to elevated levels of existential
17 threat. For some athletes, the perception of threat may contribute to anxiety, chronic
18 stress and, if unmanaged, may subsequently lead to the onset of burnout (Frost &
19 Henderson, 1991; Hall, Kerr, & Matthews, 1998; Koivula, Hassmen, & Fallby, 2002;
20 Mor, Day, Flett, & Hewitt, 1995). A further possibility is that key defining characteristics
21 of perfectionism elicit validation-seeking and this desire for validation initiates a
22 psychological process that results in a pattern of cognition and affective responses to
23 engagement which is reflective of the burnout syndrome.

24 The potential for specific dimensions of perfectionism to encourage validation-
25 seeking is apparent in early descriptions of the perfectionism construct which suggest that

1 perfectionistic striving may be a strategy to compensate for a perceived lack of self-worth
2 (e.g., Burns, 1980; Hollander, 1965). Research has since provided some support for these
3 assertions by demonstrating a positive association between various dimensions of
4 perfectionism and the belief that acceptance is conditional, meaning that self-worth can
5 only be established through demonstrating accomplishment (e.g., Koivula et al., 2002;
6 Flett, Besser, Davis, & Hewitt, 2003). Ordinarily, striving to reach exceedingly high
7 goals ought to have few negative consequences for athletes. However, the combined
8 effects of both conditional-acceptance and the pursuit of exceptionally high standards
9 may lead to a more extreme pattern of achievement striving. Ultimately, because a strong
10 desire for self-validation regulates perfectionistic striving, validation-seeking increases
11 the potential for burnout when the goal of proving ones worth becomes thwarted
12 (DiBartelo, Frost, Chang, LaSota & Grills, 2004; Lundh, 2004).

13 Susceptibility to burnout may be especially pronounced when athletes exhibit
14 characteristics of either self-oriented or socially prescribed perfectionism. The enhanced
15 vulnerability associated with these dimensions of perfectionism is because both
16 conditional self-acceptance and perfectionistic striving are defining features of self-
17 oriented and socially prescribed perfectionism (Hewitt & Flett, 1991). Self-oriented
18 perfectionism involves the belief that self-acceptance is based on the attainment of
19 exceedingly high personal standards, whereas socially prescribed perfectionism involves
20 the belief that acceptance from self and others is contingent on the attainment of
21 exceptionally high standards which are perceived to be externally imposed. Both
22 dimensions of perfectionism have the potential to be associated with motivational
23 debilitation; however, the mechanisms which lead from perfectionism to burnout may
24 differ because each form of perfectionism evokes distinct motivational processes (see
25 Hill et al., 2008).

1 The fact that both socially prescribed and self-oriented perfectionism are
2 positively associated with conditional self-acceptance suggests that each dimension has
3 the potential to energise validation-seeking (Flett et al., 2003). Clearly, therefore, both
4 forms of perfectionism may lead to motivational debilitation if the goals against which
5 perfection is evaluated become thwarted. However, unlike socially prescribed
6 perfectionism, self-oriented perfectionism has also been associated with more adaptive
7 patterns of achievement behaviour. These include intrinsic forms of regulation, as well as
8 the pursuit of mastery goals (Miquelon, Vallerand, Grouzet, & Cardinal, 2005; Speirs-
9 Neumeister & Finch, 2006; Van Yperen, 2006). Consequently, while socially prescribed
10 perfectionism is likely to encourage a pattern of achievement striving characterised
11 primarily by high levels of validation-seeking, self-oriented perfectionism may invoke a
12 combination of validation-seeking and growth-seeking.

13 Because self-oriented and socially prescribed perfectionism are considered to
14 elicit distinct regulatory processes, the purpose of the current study was to examine one
15 mechanism by which multidimensional perfectionism may lead to athlete burnout.
16 Specifically, the present investigation assessed the mediational influence of validation
17 and growth-seeking on the relationship between multidimensional perfectionism and
18 athlete burnout. Based on the preceding argument and previous research, it was
19 hypothesised that socially prescribed perfectionism would have a direct positive
20 relationship with athlete burnout, and that self-oriented perfectionism would have a direct
21 inverse relationship with athlete burnout. It was also hypothesised that the association
22 between socially prescribed perfectionism and athlete burnout would be partially
23 mediated by high levels of validation-seeking and low levels of growth-seeking.
24 Furthermore, it was hypothesised that the association between self-oriented perfectionism
25 and athlete burnout would be partially mediated by high levels of both validation-seeking

1 and growth-seeking. The combination of higher levels of validation-seeking and growth-
2 seeking would lead to two contrasting pathways indicative of the potential for both higher
3 and lower levels of burnout. The hypothesised structural relations between dimensions of
4 perfectionism, validation-seeking, growth-seeking and athlete burnout are depicted in
5 Figure 1.

6 Method

7 *Participants*

8 Participants were 150 (86 males, 64 females) canoe polo and kayak slalom
9 athletes recruited from the top divisions in the UK (age $M = 26.05$ years, $SD = 9.57$ years,
10 range = 13 to 55). Sixty-five of the athletes were members of Great Britain development
11 squads or were members of Great Britain national teams. Participants were approached at
12 club and regional competitions and were asked to complete a multi-sectional
13 questionnaire at their leisure. Informed consent was gained from each participant or
14 parent/guardian when appropriate. As a non-professional sport, these athletes can face
15 considerable challenges with regards to balancing life and sport commitments which may
16 render them susceptible to high levels of participation related stress. The athletes reported
17 that, on average, they considered their sport very important in comparison to other things
18 in their lives ($M = 7.40$, $SD = 1.18$; 1 = *not at all important* to 9 = *extremely important*).
19 Most were experienced participants ($M = 9.32$ years, $SD = 7.03$) who reported that they
20 spent 6.86 hours per week ($SD = 5.42$) training for their sport.

21 *Measures*

22 *Athlete Burnout*: Raedeke and Smith's (2001) Athlete Burnout Questionnaire
23 (ABQ) was used to assess athlete burnout. This instrument contains three 5-item
24 subscales that are scored on a five-point Likert scale (1 = *almost never* to 5 = *almost*
25 *always*). The scale assesses an athletes' experience of a reduced sense of athletic

1 accomplishment (RA) (e.g., “I’m accomplishing many worthwhile things.” (reversed)),
2 perceived emotional and physical exhaustion (E) associated with their sports participation
3 (e.g., “I feel so tired from my training that I have trouble finding energy to do other
4 things.”), and the extent to which athletes devalue the activity (D) (e.g., “I feel less
5 concerned about being successful than I used to.”). Raedeke and Smith (2001) have
6 provided evidence to support the validity and the reliability of the measurement
7 associated with the scale when measuring burnout symptoms in athletes. For example,
8 internal consistency ($\alpha = \text{RA } .84$, $\alpha = \text{E } .89$ and $\alpha = \text{D } .89$) and test-retest reliability of the
9 scale ($r = \text{RA } .86$, $r = \text{E } .92$ and $r = \text{D } .92$) were found in high school and collegiate
10 athletes (age 14- 23 years) (Raedeke & Smith, 2001). This instrument is currently
11 considered the most appropriate measure of burnout symptoms in athletes (Raedeke &
12 Smith, 2001).

13 *Multidimensional Perfectionism:* Self-oriented (SOP) and socially prescribed
14 perfectionism (SPP) were assessed using Hewitt and Flett’s (1991) Multidimensional
15 Perfectionism Scale (MPS). The third dimension measured by this scale, other-oriented
16 perfectionism, is unrelated to self-focused personal consequences and was, therefore, not
17 included in the study. The stem of the instrument was adapted to ensure that the athletes
18 focused on cognitions and beliefs associated with participation in their sport when
19 responding to the items (“Listed below are a number of statements concerning how you
20 view your participation in your sport...”). The two subscales of the MPS each contain 15-
21 items measured on a seven-point Likert scale (1 = *strongly disagree* to 7 = *strongly*
22 *agree*). Responses on the self-oriented perfectionism subscale reflect excessive striving
23 for high personal standards and self-critical tendencies (e.g., “I must always be successful
24 in activities that are important to me.” “I demand nothing less than perfection of
25 myself.”). In contrast, responses to the socially prescribed perfectionism subscale reflect

1 the belief that significant others have exceedingly high standards and that acceptance is
2 based on the attainment of those standards (e.g., “The people around me expect me to
3 succeed at everything I do.” “Others will like me even if I don’t excel at
4 everything.”(reversed scored)). Evidence to support the validity and reliability of
5 measurement associated with the scale has been provided by Hewitt and Flett (1991,
6 2004). This evidence includes good internal consistency ($\alpha = \text{SOP } .89$ and $\alpha = \text{SPP } .86$)
7 and test-retest reliability for these scales ($r = \text{SOP } .88$ and $r = \text{SPP } .75$) in student and
8 general samples (Hewitt & Flett, 1991). This instrument is currently the only available
9 measure of self-oriented and socially prescribed perfectionism with extensive evidence
10 for its reliability and validity (Hewitt & Flett, 1991, 2004).

11 *Validation-seeking and growth-seeking:* Validation-seeking (VS) and Growth-
12 seeking (GS) were assessed using Dykman’s (1998) Goal Orientation Inventory (GOI).
13 The stem of the instrument was adapted to focus the participants on their participation in
14 sport, rather than on how they think and act in general. The validation-seeking and
15 growth-seeking subscales of the GOI contain 18-items each and are measured on a seven-
16 point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). The validation subscale
17 reflects a strong motivational need to prove self-worth, competence or likeability (e.g., “I
18 feel like I’m constantly trying to prove that I’m as competent as the people around me.”).
19 In contrast, response to the growth-seeking subscale reflects a strong motivational need to
20 improve and realise ones’ potential (e.g., “My natural tendency is to view problem
21 situations as providing opportunities for growth and self-improvement.”). Dykman
22 (1998) has provided support for the validity and reliability of the measurement associated
23 with the scale in student samples. This evidence includes internal consistency ($\alpha = \text{VS } .97$
24 and $\alpha = \text{GS } .96$) and test-retest reliability ($r = \text{VS } .76$ and $r = \text{GS } .78$; Dykman, 1998).
25 Prior to the current study, this instrument has not been used in an athlete sample.

1 Results

2 *Preliminary analysis*

3 Prior to the main analyses, a missing value analysis was conducted on the data.
4 Due to large amounts of missing data from individual respondents (> 5%), nine
5 participants were removed from the sample. The missing value analysis indicated that for
6 the remaining sample the percentage of missing data due to item non-response was
7 extremely small ($M = 0.39$, $SD = 0.52$, range = 0 to 2.80%). There were 112 complete
8 cases and 29 cases with incomplete data. For those with incomplete data, the average
9 percentage of missing values due to item non-response was 1.90% ($SD = 1.04$, range =
10 1.20 to 4.99%). This percentage of missing data is the equivalent of less than 2 items (M
11 = 1.55, $SD = 0.83$, range 1 to 4). An inspection of the pattern of missing data suggested a
12 non-systematic mechanism for the missing data. Specifically, there was a high ratio of
13 unique patterns of missing data to the number of participants with missing data = .97, and
14 only one common pattern shared by two participants (same item not complete).
15 Consequently, each missing item was replaced using the mean of the each case's
16 available non-missing items from the relevant subscale. This method of imputation is
17 considered to be an appropriate strategy when the amount of missing data is low and
18 items are highly correlated (Graham, Cumsille & Elek-Fisk, 2000)¹.

19 Next, the data was screened for univariate and multivariate outliers (see
20 Tabachnick & Fidell, 2007). Standardised z-scores larger than 3.29 ($p < .001$, two-tailed)
21 and variables with a Mahalanobis distance greater than $\chi^2_{(7)} = 24.73$ were used as criteria
22 for univariate and multivariate outliers. This procedure did not lead to the removal of any
23 participants. The remaining data ($n = 141$) was considered to be approximately univariate
24 and multivariate normal (absolute skewness $M = .24$, $SD = .16$, $SE = .20$, absolute

1 kurtosis $M = .28$, $SD = .21$, $SE = .41$, Mahalanobis distance $M = 6.95$, $SD = 3.89$,
2 Mardia's normalised multivariate kurtosis = 1.12).

3 The homogeneity of the covariance matrix of the variables included in the model
4 across competitive level (club level athlete only/ GB representative or development squad
5 representative) was assessed using Box's M test. These analyses indicated that the
6 covariance matrix was homogenous across competitive level, Box's M (28.00, 59769.34)
7 = 1.35 ($p > .05$). The data were, therefore, analysed in an ungrouped fashion. Finally,
8 internal reliability analysis (Cronbach's alpha) indicated that all instruments
9 demonstrated internal consistency above that typically considered acceptable ($\alpha = .70$).
10 The values are displayed in Table 1.

11 *Descriptive Analyses*

12 The descriptive statistics displayed in Table 1 indicate that the sample reported
13 moderate-to-high levels of self-oriented perfectionism and low-to-moderate levels of
14 socially prescribed perfectionism. These mean scores are of a similar magnitude to those
15 observed in junior-elite samples suggesting that athletes may typically score higher in
16 self-oriented perfectionism than socially prescribed perfectionism (Hill et al., 2008). The
17 sample also reported low-to-moderate burnout scores across all symptoms of burnout.
18 These mean scores are also of a similar magnitude to those reported elsewhere (e.g.,
19 Cresswell & Eklund, 2005). This suggests that levels of burnout symptoms may be
20 comparable across sports in similar samples. Finally, participants reported moderate-to-
21 high levels of growth-seeking and low-to-moderate levels of validation-seeking. No
22 scores from athlete samples are available for comparison.

23 *Bivariate Correlations between Burnout, Perfectionism, and Validation and Growth-* 24 *Seeking*

1 The bivariate associations between dimensions of perfectionism, validation-
2 seeking, growth-seeking and dimensions of athlete burnout are displayed in Table 1.
3 Socially prescribed perfectionism was positively related to all symptoms of burnout
4 (reduced sense of accomplishment, emotional and physical exhaustion, and devaluation).
5 In contrast, self-oriented perfectionism was unrelated to burnout symptoms. The
6 correlational analyses further indicated that socially prescribed perfectionism was
7 positively related to validation-seeking and inversely related to growth-seeking. As
8 hypothesised, self-oriented perfectionism was positively related to both growth-seeking
9 and validation-seeking. Also consistent with the hypotheses, validation-seeking was
10 positively related to all symptoms to burnout symptoms and growth-seeking was
11 inversely related to all burnout symptoms. The relationship between growth-seeking and
12 physical and emotional exhaustion was not statistically significant, however.

13 *Assessment of a model specifying the relationship between dimensions of perfectionism,*
14 *validation and growth-seeking and athlete burnout*

15 AMOS statistical software package (Version 6.0.1; Arbuckle, 2006) utilising
16 maximum likelihood estimation was employed to test the hypothesised model.
17 Dimensions of perfectionism, validation-seeking and growth-seeking were represented as
18 measured variables, while burnout was represented as a latent variable reflecting scores
19 on the three dimensions of the ABQ to enable a measure of the burnout syndrome². One
20 limitation of this mixed model approach is that measurement error in the observed
21 predictor variables is not modelled. However, this approach was considered appropriate
22 due to the small sample size (< 150) and the requirement for a minimum participant to
23 estimated parameter ratio (5:1; Bentler, 1995).

24 The fit of the hypothesised model was assessed using a combination of absolute
25 and incremental fit indices; chi-square statistic (χ^2), χ^2/df ratio, standardised root mean

1 squared residual (SRMR), comparative fit index (CFI) and the incremental fit index (IFI).
2 These indices were selected based on their performance with small samples (Bentler,
3 1995; Hoyle & Panter, 1995). Acceptable fit was considered to be indicated by χ^2/df ratio
4 < 3.00 , $SRMR < .10$, $CFI > .90$, and $IFI > .90$ (Marsh, Hau, & Wen, 2004; Schermelleh-
5 Engel et al., 2003). Fit indices for each estimated model are displayed in Table 2.

6 An assessment of the proposed mediation and post-hoc probing of significant
7 mediational effects were conducted using a procedure described by Holmbeck (1997,
8 2002). In this approach, establishing mediation involves three steps. The first is an
9 assessment of the direct relationship between the predictor variable and the outcome
10 variable in the absence of the mediating variable. The second is an examination of the
11 path coefficients included in the mediation pathway. The third is a comparison of the
12 direct effect of the predictor variable in the presence and absence of the mediator. In
13 order for full mediation to be supported: (i) the direct effect of the predictor variable in
14 the absence of the mediator must be statistically significant, (ii) the path coefficients
15 between the predictor variable and mediator, and the mediator and outcome variable after
16 controlling for the effect of the predictor, must be statistically significant, and (iii)
17 following the introduction of the mediator, the direct effect of the predictor on the
18 outcome variable must be reduced to zero and there must be no significant improvement
19 in fit from the introduction of the additional direct pathway ($p < .05$). If the direct effect
20 remains statistically significant, and the model provides statistically significant improved
21 fit, partial mediation rather than full mediation is supported.

22 First a model was estimated to assess the direct effect of the two dimensions of
23 perfectionism on athlete burnout in the absence of validation and growth-seeking (M1).
24 This model provided acceptable fit and the path coefficients from dimensions of
25 perfectionism to athlete burnout were statistically significant (SOP $\beta = -.27$ & SPP $\beta =$

1 .47, $p < .05$). Next, a partial mediation model that included both direct and indirect
2 pathways from dimensions of perfectionism to athlete burnout via validation and growth-
3 seeking was estimated (M2; see figure 1). This model allowed for an inspection of path
4 coefficients from the dimensions of perfectionism to the mediating variables, and from
5 the mediating variables to athlete burnout after controlling for the effect of dimensions of
6 perfectionism. The model provided an acceptable fit; however, the path coefficient from
7 self-oriented perfectionism to validation-seeking, and the path coefficient from growth-
8 seeking to burnout, was not statistically significant. Consequently, only the mediation
9 pathway from socially prescribed perfectionism to athlete burnout via validation-seeking
10 was tenable. Finally, the partial mediation model was compared to a more parsimonious
11 model depicting full mediation (M3). In the full mediation model, the direct pathways
12 from dimensions of perfectionism to athlete burnout were constrained to zero. A chi-
13 square difference test indicated that the partial mediation model provided a significantly
14 better fit than the full mediation model. This finding indicates that the direct pathways
15 from dimensions of perfectionism to athlete burnout contribute significantly to the model
16 and supports partial mediation, rather than full mediation. The indirect effect of socially
17 prescribed perfectionism on athlete burnout via validation-seeking was statistically
18 significant (standardised indirect effect = .13, unstandardised indirect effect = .06 SE =
19 .03, $p < .05$, 95% CI 0.01 to 0.11). The partial mediation model was subsequently
20 accepted as the more tenable model and is displayed in Figure 2.

21 The final model indicated that the relationship between socially prescribed
22 perfectionism and athlete burnout was partially mediated by validation-seeking. The
23 dimensions of perfectionism explained 27% of variance in validation-seeking and 16% of
24 variance in growth-seeking. Validation-seeking and the two dimensions of perfectionism
25 accounted for 31% of behavioural variance in athlete burnout. Calculation of standardised

1 total direct and indirect effects indicated that SPP (.48) made the largest contribution to
2 the prediction of burnout followed by both validation-seeking (.27) and self-oriented
3 perfectionism (-.27) and, finally, growth-seeking (-.15).

4 *Potential confounding and suppression effects*

5 Comparison of the effect of self-oriented perfectionism on validation-seeking and
6 athlete burnout in the absence and presence of socially prescribed perfectionism indicated
7 that these relationships may be either confounded or suppressed by socially prescribed
8 perfectionism (Cohen, Cohen, Aiken, & West, 2003; MacKinnon, Krull, & Lockwood,
9 2000). Suppression is evident when the relationship between a predictor and an outcome
10 variable becomes larger or changes direction in the presence of another predictor variable
11 (Cohen et al., 2003). In the current study, after controlling for socially prescribed
12 perfectionism, the positive bivariate relationship between self-oriented perfectionism and
13 validation-seeking was reduced to non-significance. The opposite effect was observed in
14 the relationship between self-oriented perfectionism and athlete burnout. Specifically,
15 when socially prescribed perfectionism was controlled, the predictive ability of self-
16 oriented perfectionism was enhanced. The implications of these effects are considered in
17 the discussion.

18 Discussion

19 Previous research suggests that maladaptive dimensions of perfectionism may
20 predispose athletes to the development of burnout because perfectionism encourages
21 validation-seeking (Hill et al., 2008; Lemyre et al., 2008). The present investigation
22 tested a model in which the relationships between self-oriented and socially prescribed
23 dimensions of perfectionism and athlete burnout are mediated by validation and growth-
24 seeking (Dykman, 1998). Specifically, it was proposed that validation and growth-
25 seeking would partially mediate the relationship between both self-oriented and socially

1 prescribed perfectionism and athlete burnout. Based on previous research, it was
2 hypothesised that socially prescribed perfectionism would have a direct positive
3 relationship, and self-oriented perfectionism would have a direct inverse relationship,
4 with athlete burnout. It was also hypothesised that with higher levels of socially
5 prescribed perfectionism, increased validation-seeking and decreased growth-seeking
6 would be reported, leading to an elevation in burnout symptoms. In contrast, with higher
7 levels of self-oriented perfectionism, increases in both validation-seeking and growth-
8 seeking were hypothesised, leading to two contrasting pathways indicative of the
9 potential for both higher and lower levels of athlete burnout.

10 The findings provided partial support for the hypothesised model. Direct
11 pathways from dimensions of perfectionism to athlete burnout were as predicted, and the
12 relationship between socially prescribed perfectionism and burnout was partially
13 mediated by validation-seeking. However, there was no indirect relationship between
14 self-oriented perfectionism and athlete burnout. The variables in the structural model
15 explained 27% variance in validation-seeking, 16% variance in growth-seeking and 31%
16 variance in athlete burnout.

17 *Socially prescribed perfectionism and burnout: The mediating effect of validation-*
18 *seeking*

19 The finding that socially prescribed perfectionism had both a positive direct and
20 indirect association with elevated symptoms of athlete burnout is consistent with previous
21 research and the theoretical framework presented. In particular, the findings provide
22 further support for suggestions that it is a belief that one must achieve socially imposed
23 perfectionistic standards in order to gain approval from self and others that will lead to
24 elevated burnout symptoms in athletes (Gould et al., 1996; Lemyre et al., 2008).
25 Extending previous research, the current findings indicate that this relationship may, in

1 part, be due to a strong desire for self-validation. Clearly, the attraction of sporting
2 achievement as a vehicle for self-validation may explain why some athletes are unable to
3 extricate themselves from athletic environments when they begin to experience
4 debilitating cognition and affect associated with burnout.

5 *Self-oriented perfectionism and burnout*

6 The findings from the test of the structural model confirmed an inverse
7 relationship between self-oriented perfectionism and athlete burnout which replicates
8 previous research (e.g., Appleton et al., in press; Hill et al. 2008). However, the
9 hypothesis that self-oriented perfectionism would be indirectly related to athlete burnout
10 via a positive association with both validation-seeking and growth-seeking was not
11 supported. This finding was because in the final model growth-seeking was unrelated to
12 athlete burnout and self-oriented perfectionism was unrelated to validation-seeking.
13 There was, however, some support for the hypothesised relationships at a bivariate level.
14 Specifically, growth-seeking was negatively correlated with a reduced sense of athletic
15 accomplishment and sports devaluation, and self-oriented perfectionism was positively
16 associated with validation-seeking.

17 The inverse association between growth-seeking and some symptoms of burnout
18 may, therefore, still explain why self-oriented perfectionism is inversely associated with
19 burnout. Specifically, despite the potential for self-oriented perfectionism to contribute to
20 undesirable psychological consequences (see Flett & Hewitt, 2005, 2006), growth-
21 seeking may contribute to positive achievement experiences, foster intrinsic motivation,
22 and enhance the development of perceived competence. While the association between
23 self-oriented perfectionism and growth-seeking is not consistent with Hewitt and Flett's
24 (1991) assertion that this dimension of perfectionism is fundamentally maladaptive, it
25 supports research in other achievement contexts that has found that self-oriented

1 perfectionism contributes to positive motivational outcomes in non-clinical samples (e.g.,
2 Bieling, Israeli, Smith & Anthony, 2003; Mills & Blankstein, 2000). Although there is
3 currently insufficient evidence to draw any firm conclusions regarding the consequences
4 of self-oriented perfectionism for athletes, the present findings provide some initial
5 evidence that growth-seeking may be a source of a number of positive consequences that
6 may include resilience against a reduced sense of athletic accomplishment and sport
7 devaluation.

8 The finding that self-oriented perfectionism was unrelated to validation-seeking in
9 the final structural model despite being positively related to validation-seeking at a
10 bivariate level was also unexpected. One reason why there was no significant association
11 between self-oriented perfectionism and validation-seeking in the structural model may
12 be due to the confounding or suppressor effects of socially prescribed perfectionism. A
13 comparison of the relationship between self-oriented perfectionism and validation-
14 seeking before and after controlling for socially prescribed perfectionism suggests that
15 the relationship differs depending on whether socially prescribed perfectionism is
16 included in the model. In the current study, this suppressor effect may also extend to
17 burnout because controlling for socially prescribed perfectionism also lead to an increase
18 in the predictive ability of self-oriented perfectionism with regards to burnout symptoms.

19 Similar patterns of suppression have been noted in other research that has
20 examined the mediating influence of third-order variables on the relationship between
21 dimensions of perfectionism and distress (e.g., Aldea & Rice, 2006; Flett et al. 2003;
22 Scott 2007; Wu & Wei, 2008). Commenting on this issue, Aldea and Rice (2006) have
23 noted that when examining the effects of correlated dimensions of perfectionism
24 simultaneously, each may act to suppress the other in a manner that provides more
25 purified associations with other variables. As self-oriented and socially prescribed

1 perfectionism are typically positively correlated, their relationship may render it difficult
2 to draw firm conclusions about their consequences when both are included in the same
3 structural model. The current findings indicate that after controlling for socially
4 prescribed perfectionism, self-oriented perfectionism may appear more adaptive. This
5 possibility suggests that shared variance between the two dimensions of perfectionism
6 may be a fundamental source of the psychological difficulties associated with self-
7 oriented perfectionism (see Van Yperen, 2006). The issue of suppression therefore
8 represents an important consideration for future research examining these dimensions of
9 perfectionism.

10 *Applied implications*

11 The finding that socially prescribed perfectionism and validation-seeking may
12 underpin the development of burnout symptoms for athletes has a number of applied
13 implications. Those who have discussed the distinction between perfectionistic striving
14 and conscientious achievement striving suggest that there is a qualitative difference
15 between perfectionistic goals and the pursuit of exceptionally high standards (e.g.,
16 Greenspon, 2000; Hall, 2006; Lundh, 2004). Most notably, perfectionistic goals are
17 suggested to include a conditional sense of self-acceptance. The combination of
18 conditional self-acceptance and external standards in the form of socially prescribed
19 perfectionism appears especially debilitating. High standards are obviously an important
20 part of skill development; however, when these standards are perceived to be necessary in
21 order to attain approval of significant others they are likely to have a negative impact
22 on athlete development.

23 Thus, athletes should be encouraged to consider achievement in self-referenced
24 terms and deemphasise the association between attainment and a sense of acceptance.
25 The promotion of mastery involvement is one possible way of promoting adaptive

1 patterns of engagement (Flett & Hewitt, 2005; Hall 2006). Mastery involvement may
2 have the potential to shift focus away from external standards and reduce the concern
3 over mistakes and self-criticism that are purported to underpin a number of the negative
4 consequences associated with perfectionism. This possibility requires empirical
5 examination. Flett and Hewitt (2005) have also argued that other factors such as
6 enhanced self-efficacy and effective coping strategies may protect athletes against the
7 perils of perfectionism. It may be that utilising problem-focused coping, and eschewing
8 avoidant coping, may provide direct protection against the onset of burnout by reducing
9 the stress associated with validation-seeking (Flett & Hewitt, 2006), as well as providing
10 indirect protection by increasing efficacy through goal attainment (Gaudreau & Antel,
11 2008; Gaudreau & Blondin, 2002).

12 *Limitations and other future directions*

13 The findings from the current investigation must be considered in context of the
14 study's limitations. Dimensions of perfectionism, validation-seeking and growth-seeking
15 were modelled without measurement error. This approach can lead to an underestimate of
16 indirect effects due to attenuated relations between the mediating variable and the
17 predictor and outcome variables (Shrout & Bolger, 2002; Cheung & Lau, 2008). The
18 absence of mediation via growth-seeking may be a result of this attenuation. A relatively
19 small sample size was also used in the current study. The non-significant pathways in the
20 model may have been statistically significant in a larger sample and supported the
21 mediating role of growth-seeking. Future studies can address this issue by examining
22 whether the model structure can be replicated across larger samples.

23 In terms of the psychological processes outlined, the concurrent measurement of
24 the variables within the model precludes inference of causality. While the mechanisms
25 implied are supported by previous research (e.g., Flett et al., 2003), without longitudinal

1 work it is not possible to begin to address this issue. Longitudinal examination of these
2 relationships would also allow for a meaningful comparison of alternative models that
3 reflect other potential relations between perfectionism and validation-seeking. For
4 example, it remains a possibility that the pursuit of perfectionistic standards arises as a
5 consequence of validation-seeking, rather than vice-versa. Finally, while the validity of
6 the instrument used to assess validation and growth-seeking has been established outside
7 of a sport context, further examination of its psychometric properties (e.g., factor
8 structure) using athlete samples is required.

9 *Conclusions*

10 The findings from the current study support those observed elsewhere and
11 indicate that socially prescribed perfectionism may be a critical antecedent of burnout in
12 athletes (Appleton et al., 1996; Hill et al., 2008). The findings extend research in this area
13 by indicating that the association can, in part, be explained by validation-seeking through
14 athletic achievement. It is still unclear, however, whether self-oriented perfectionism will
15 lead to athlete burnout or provide resilience against its development. To date, no study
16 has demonstrated a direct positive relationship between self-oriented perfectionism and
17 symptoms of burnout. Moreover, a positive association with growth-seeking in the
18 current study supports the view that self-oriented perfectionism may have some desirable
19 motivational consequences. There is, however, also some evidence from this study and
20 research by Hill et al. (2008) that suggests self-oriented perfectionism may not be wholly
21 adaptive for athletes (see also Flett & Hewitt, 2006). Finally, the current findings suggest
22 that when examining the possible association between self-oriented perfectionism and
23 maladaptive patterns of cognition, affect and behaviour, psychological maladjustment
24 may be less apparent when socially prescribed perfectionism is controlled.

25

1 ¹ Based on the recommendations of Tabachnick and Fidell (2007), the analysis was
2 repeated using only cases with complete data. Estimation of the final partial mediation
3 model using this sample was similar to that observed with the full imputed data set (χ^2
4 (4) = 21.69, $\chi^2/df = 2.41$, CFI = .92, IFI = .93).

5 ² Standardised residual covariances were inspected for the burnout latent factor. Apart
6 from one residual (= 2.04), all residuals were below 2.00. Average absolute residual was
7 .44 ($SD = .57$, median = .17, range 0.00-2.04).

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1 Figure Caption

2 Figure 1 *Proposed structural model: The mediating influence of validation-seeking and*
3 *growth-seeking on the relationship between perfectionism and athlete burnout*

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Figure Caption

Figure 2 *Structural model: The mediating influence of validation and growth-seeking on the relationship between perfectionism and athlete burnout*

1 Table 1 *Descriptive statistics, bivariate correlations, and internal reliability coefficients for dimensions of perfectionism, validation-seeking,*
 2 *growth-seeking and symptoms of athlete burnout*

Variable	1	2	3	4	5	6	<i>M</i>	<i>SD</i>	α
1. Self-oriented perfectionism							4.70	0.86	.86
2. Socially prescribed perfectionism	.26**						3.62	0.71	.78
3. Validation-seeking	.21*	.52**					3.73	1.23	.95
4. Growth-seeking	.31**	-.15	-.19*				4.89	0.80	.91
5. Reduced athletic accomplishment	-.09	.34**	.31**	-.27**			2.56	0.68	.73
6. Physical and emotional exhaustion	.04	.26**	.31**	-.12	.14		2.57	0.86	.88
7. Devaluation	-.14	.22**	.23**	-.19*	.53**	.32**	2.23	0.84	.78

3 * $p < .05$ ** $p < .01$

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1 Table 2 *Assessment of fit of measurement and structural models*

	χ^2	df	χ^2/df	CFI	IFI	SRMR	$\Delta\chi^2_{(df)}$
Test of mediation							
M1: Absence of mediators	12.57	4	3.14	.91	.92	.06	
M2: Partial mediation	22.44	9	2.49	.92	.93	.06	
M3: Full mediation	33.39	11	3.03	.87	.88	.08	M2 vs. M3 = (2) 10.95**

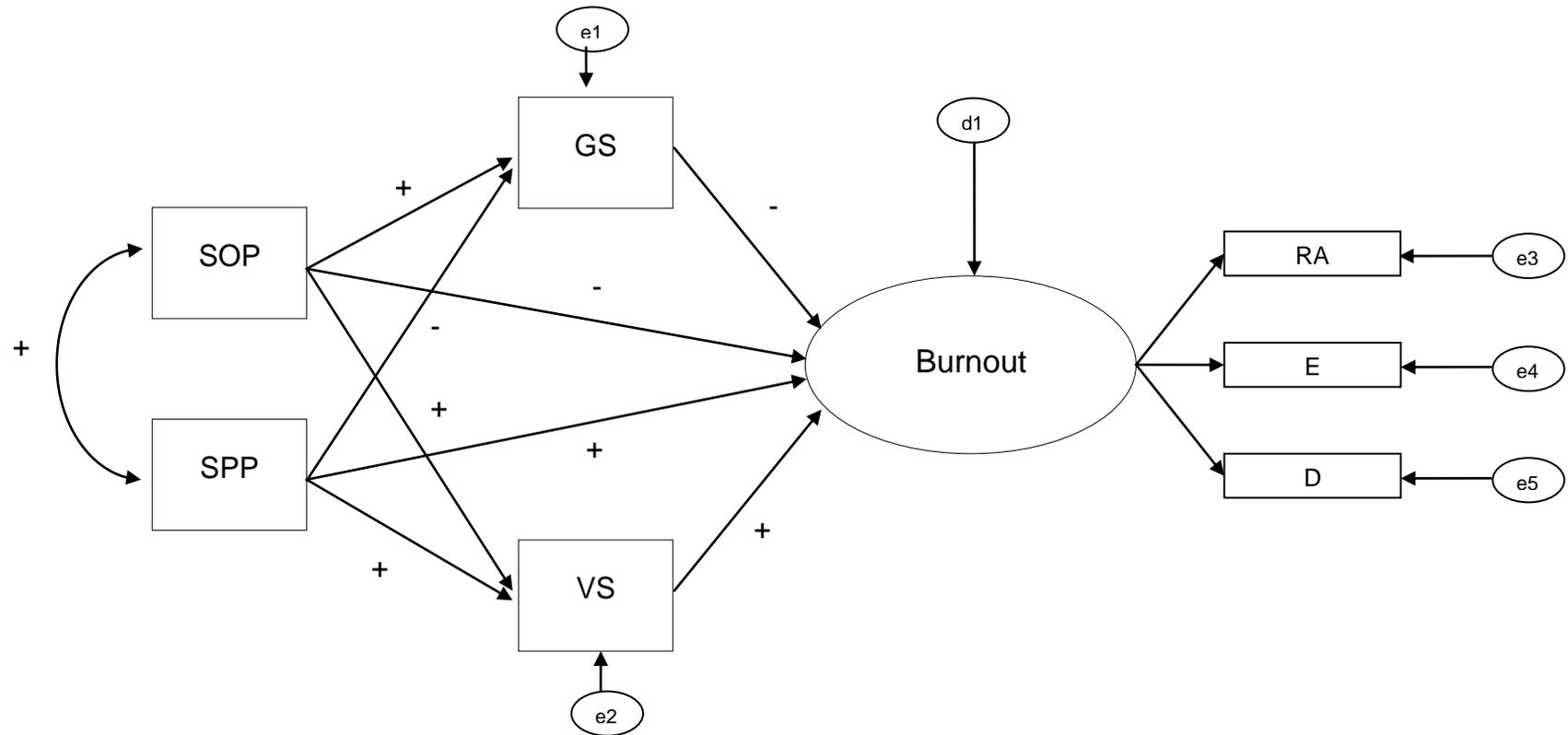
2 *Note.* M1 = In this model both dimensions of perfectionism have a direct pathway to athlete burnout. No mediators are included in the model;
3 M2 = In this model both direct and indirect pathways from dimensions of perfectionism to athlete burnout are included (see figure 1); M3 = In
4 this model dimensions of perfectionism have only indirect pathways to athlete burnout via validation and growth-seeking.

5 * $p < .05$ ** $p < .01$

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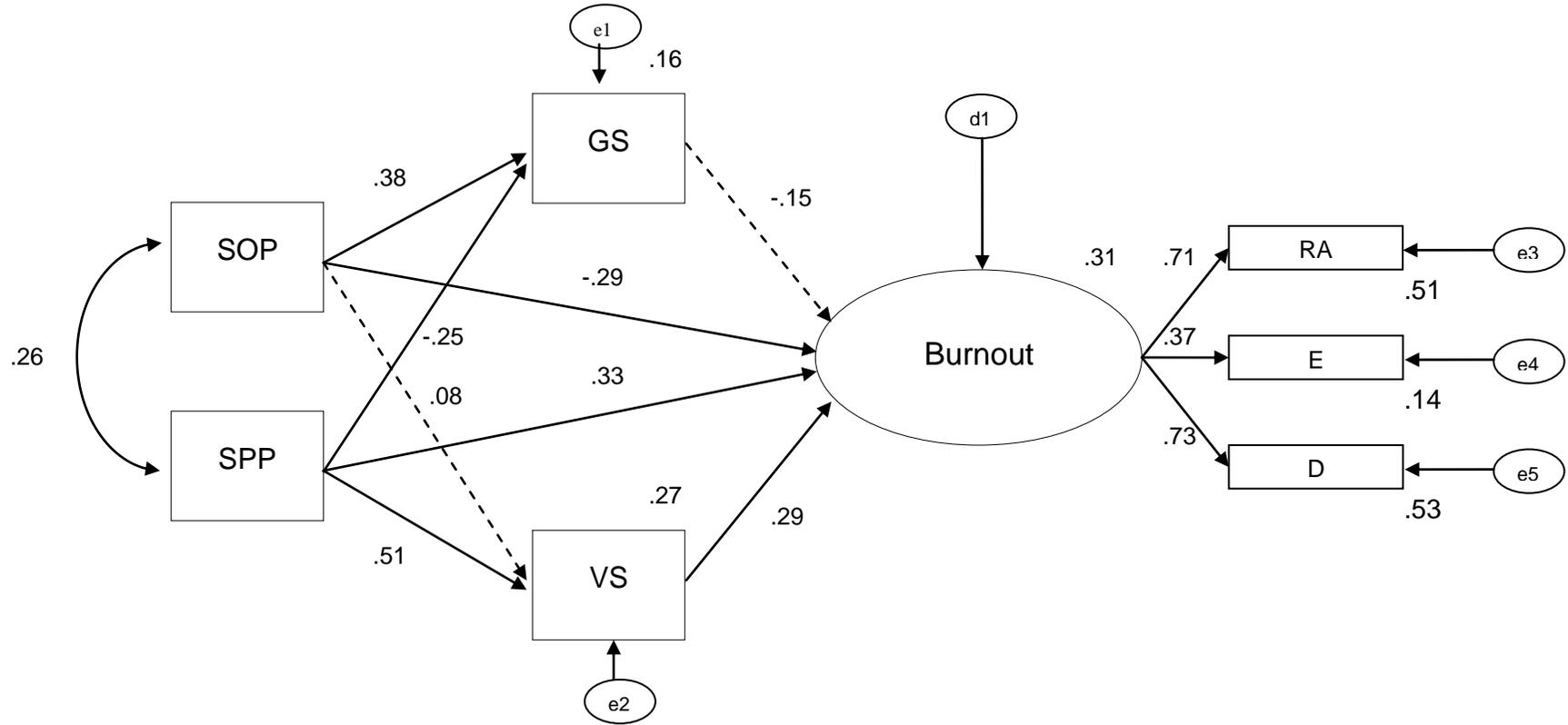
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Note: SOP = Self-oriented perfectionism, SPP = Socially prescribed perfectionism, VS = Validation-seeking, GS = Growth-seeking, RA = Reduced accomplishment, E = Emotional and physical exhaustion, and D = Sport devaluation. The direction of the hypothesised relationship is indicated by + or -.

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Note: SOP = Self-oriented perfectionism, SPP = Socially prescribed perfectionism, VS = Validation-seeking, GS = Growth-seeking, RA = Reduced accomplishment, E = Emotional and physical Exhaustion, and D = Sport devaluation. Pathways that are not statistically significant are displayed using a dashed line ($p > .05$). Variance accounted for in each endogenous variable is displayed.

2